

In claim 9, line 1, please delete the number "7" and substitute therefor the number --1--.

Please add the following new claim:

--25. The method of claim 1 in which the esterification of the hydroxyl groups of the lignocellulosic material consists essentially of esterifying the hydroxyl groups of the lignin of the lignocellulosic material.--

REMARKS

Reconsideration of the above-identified patent application, as amended, is respectfully requested. The claims have been rejected as unpatentable over the prior art, primarily the Teng patent 3,788,984. Applicants submit that the claims patentably distinguish over the prior art as set forth hereafter. In addition, claims 8 and 9 were objected to as being dependent on cancelled claim 7, and this ground for objection has been removed by the amendment of those claims to depend from claim 1.

The Teng patent has been cited as showing the esterification of lignocellulosic materials with acetic anhydride in a process which appears to be identical with that of the present invention. However, there is a substantial distinction between the process of Teng and that of the present invention, the consequence of which is that Teng does not anticipate or make obvious the present process and resulting products.

The Teng patent does not involve the esterification of lignocellulosic material, but rather applies a severe process which is distinguishable from the claimed one. Teng employs perchloric acid in his process. Specifically, the process of Teng for producing, for example, cellulose acetate involves treatment of the cellulose source material with acetic anhydride in the presence of perchloric acid for 2-5 minutes at 0-5°C (column 4, lines 21-27). Perchloric acid is an aggressive reagent which is required to "smash-up" cellulose to make it reactive. If the cellulose source material being treated includes lignin and hemecellulose, then the latter materials can be expected to be washed out of the material due to the aggtressive and acidic processes used by Teng.

This result is not surprising given the premise of Teng that the cellulose, rather than any lignin, is to be esterified. This focus of Teng is clear from the patent, and is readily demonstrated by the fact that the preferred cellulose source material for Teng is cottonseed hulls, which do not contain lignin. Indeed, Teng indicates that any lignin or hemicellulose which may be present are deemed to be impurities.

Enclosed is a copy of the reference Methods in Carbohydrate Chemistry, cited by Teng. The method involving perchloric acid as used by Teng relates to the production of cellulose acetate, but make sno reference to esterification of lignin (see pages 196-197).

By contrast, the present invention specifically relates to the esterification of the hydroxyl groups of the lignin. The method involves absorption of the esterifying agent (e.g., acetic anhydride) by the lignocellulose material, which is then heated. No perchloric acid or other aggressive catalyst is used, and little, if any, substitution of the cellulose occurs because it has a crystalline structure with relatively inaccessible reactive groups. Thus, at one level there is the present process which treats lignocellulosic material to esterify the hydroxyl groups of the lignin with little if any impact on the cellulosic material. At a totally different level is the Teng process which employs much more severe conditions - involving an aggressive agent - which will drive out any lignocellulosic material which esterifying the hydroxyl groups of the cellulosic material.

With this background, it is apparent that the Teng patent is in distinct contrast to the present invention. In fact, the Teng patent may be considered to teach AWAY from the present invention. It considers the lignocellulosic materials to be impurities to be cast out of the final product. The present invention encompasses the discovery that the lignocellulosic materials - previously considered to be deleterious - are in fact useful if properly treated.

The contrast of the Teng patent and present invention is further highlighted by a comparison of the resulting products. The Teng patent indicates that the cellulose acetates are able to absorb up to 15 times their weight of crude oil (column 2, lines 46-49). Materials prepared and used in accordance with the present invention, can absorb up to 28 times their wieght of crude oil.

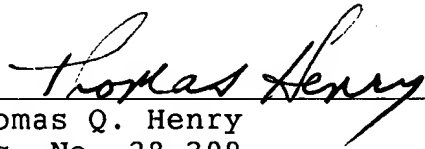
The claims remaining in the application are distinguishable over the prior art on the foregoing bases. New claim 25 provides a further distinction in requiring that the esterification of the hydroxyl groups of the lignocellulosic material consists essentially of esterifying the hydroxyl groups of the lignin of the lignocellulosic material. This further emphasizes the unobvious difference over the Teng patent, which could not be essentially directed to esterifying the hydroxyl groups of the lignocellulose for reasons already indicated. In view of these grounds of distinction, and for reasons previously argued, it is submitted that the Fahlvik reference cannot be combined with the Teng patent in a manner to suggest or make obvious the present invention.

Reconsideration of the above-identified patent application, as amended, is therefore respectfully requested and allowance of the claims in the application is solicited. Further, in view of the process difference noted between Teng and the

present invention, it is requested that the finality of the recent office action be withdrawn in the event that the present response is not considered to place the application in condition for allowance.

Respectfully submitted,

By


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